Amendments to the Claims

1. (Cancelled)

2. (Currently Amended) A mutant retroviral reverse transcriptase comprising a polymerase domain having RNA-dependent DNA polymerase activity and a substitution in the amino acid sequence of the wild type M-MLV polymerase domain within ~~(~~SEQ ID NO 8~~)~~, wherein amino acid number 1 of SEQ ID NO: 8 is the threonine following the initial methionine, corresponding to a substitution selected from the group consisting of:

(a) a substitution of leucine 52 of wild type M-MLV reverse transcriptase for a different amino acid;

(b) a substitution of histidine 204 of wild type M-MLV reverse transcriptase for a different amino acid;

(c) a substitution of methionine 289 of wild type M-MLV reverse transcriptase for a different amino acid; and

(d) a substitution of threonine 306 of wild type M-MLV reverse transcriptase for a different amino acid.

3. (Previously Presented) The mutant reverse transcriptase of claim 2, wherein said retroviral reverse transcriptase is a mutant M-MLV reverse transcriptase.

4. (Previously Presented) The mutant reverse transcriptase of claim 3, wherein leucine 52 is replaced with proline.

5-6. (Cancelled)

7. (Previously Presented) The mutant reverse transcriptase of claim 3, wherein histidine 204 is replaced with arginine.

8. (Previously Presented) The mutant reverse transcriptase of claim 3, wherein methionine 289 is replaced with leucine.

9. (Previously Presented) The mutant reverse transcriptase of claim 3, wherein threonine 306 is replaced with either lysine or arginine.

10. (Previously Presented) The mutant reverse transcriptase of claim 3, wherein the mutant reverse transcriptase has a substitution of amino acids histidine 204 and threonine 306.

11. (Previously Presented) The mutant reverse transcriptase of claim 10, wherein histidine 204 is replaced with arginine and threonine 306 is replaced with either lysine or arginine.

12. (Previously presented) The mutant reverse transcriptase of claim 2, which retains at least 50% of reverse transcriptase activity after heating to 50°C for 5 minutes.

13. (Previously presented) The mutant reverse transcriptase of claim 2, which retains at least 70% of reverse transcriptase activity after heating to 50°C for 5 minutes.

14. (Previously Presented) The mutant reverse transcriptase of claim 2, which retains at least 85% of reverse transcriptase activity after heating to 50°C for 5 minutes.

15. (Previously Presented) The mutant reverse transcriptase of claim 2, which retains at least 95% of reverse transcriptase activity after heating to 50°C for 5 minutes.

16. (Previously Presented) The mutant reverse transcriptase of claim 2, wherein the mutant retroviral reverse transcriptase has one or more properties selected from the group consisting of:

(a) reduced or substantially reduced RNase H activity in comparison to a corresponding wild-type reverse transcriptase;

(b) reduced or substantially reduced terminal deoxynucleotidyl transferase activity in comparison to a corresponding wild-type reverse transcriptase; and

(c) increased fidelity in comparison to a corresponding wild-type reverse transcriptase.

17. (Previously Presented) The mutant reverse transcriptase of claim 16, wherein the mutant retroviral reverse transcriptase has reduced or substantially reduced RNase H activity in comparison to a corresponding wild-type reverse transcriptase.

18. (Previously Presented) The mutant reverse transcriptase of claim 16, wherein the mutant retroviral reverse transcriptase has reduced or substantially reduced terminal deoxynucleotidyl transferase activity in comparison to a corresponding wild-type reverse transcriptase.

19. (Currently Amended) The mutant reverse transcriptase of claim 18, wherein the mutant reverse transcriptase has one or more ~~one or more~~ modifications or mutations at positions corresponding to amino acids selected from the group consisting of:

(a) tyrosine 133 of wild type M-MLV reverse transcriptase;

(b) threonine 197 of wild type M-MLV reverse transcriptase; and

(c) phenylalanine 309 of wild type M-MLV reverse transcriptase.

20. (Previously Presented) The mutant reverse transcriptase of claim 19, which is M-MLV reverse transcriptase.

21. (Previously Presented) The mutant reverse transcriptase of claim 20, wherein tyrosine 133 is replaced with alanine.

22. (Previously Presented) The mutant reverse transcriptase of claim 20, wherein threonine 197 is replaced with glutamic acid.

23. (Previously Presented) The mutant reverse transcriptase of claim 20, wherein phenylalanine 309 is replaced with asparagine.

24. (Previously Presented) The mutant reverse transcriptase of claim 16, wherein the mutant retroviral reverse transcriptase has increased fidelity in comparison to a corresponding wild-type reverse transcriptase.

25. (Currently Amended) The mutant reverse transcriptase of claim 24, wherein the mutant reverse transcriptase has one or more ~~one or more~~ modifications or mutations at positions corresponding to amino acids selected from the group consisting of:

(a) tyrosine 64 of wild type M-MLV reverse transcriptase;

(b) arginine 116 of wild type M-MLV reverse transcriptase; and

(c) glutamine 190 of wild type M-MLV reverse transcriptase; and

(d) valine 223 of wild type M-MLV reverse transcriptase.

26. (Previously Presented) The mutant reverse transcriptase of claim 2, wherein the mutant retroviral reverse transcriptase is selected from the group consisting of mutant M-MLV, mutant RSV, mutant AMV, and mutant HIV reverse transcriptases.

27. (Previously Presented) The mutant reverse transcriptase of claim 26, wherein the mutant retroviral reverse transcriptase is selected from the group consisting of M-MLV RNase H- reverse transcriptase, RSV RNase H- reverse transcriptase, AMV RNase H- reverse transcriptase, RAV RNase H- reverse transcriptase, and HIV RNase H- reverse transcriptase.

28. (Previously Presented) The mutant reverse transcriptase of claim 26, wherein the mutant retroviral reverse transcriptase is an M-MLV reverse transcriptase.

29. (Previously Presented). The mutant reverse transcriptase of claim 28, wherein aspartic acid 524 is replaced with glycine, glutamic acid 562 is replaced with glutamine, and aspartic acid 583 is replaced with asparagine.

30-43. (Cancelled)

44. (Previously Presented) A kit for use in reverse transcription, amplification or sequencing of a nucleic acid molecule, the kit comprising one or more mutant reverse transcriptases of claim 2.

45. (Original) The kit of claim 44, the kit further comprising one or more components selected from the group consisting of one or more nucleotides, one or more DNA polymerases, a suitable buffer, one or more primers and one or more terminating agents.

46. (Original) The kit of claim 45, wherein the terminating agent is a dideoxynucleotide.

47. (Previously Presented) The kit of claim 44, wherein the mutant reverse transcriptase is a mutant M-MLV reverse transcriptase.

48-50. (Cancelled)

51. (Previously Presented) The mutant retroviral reverse transcriptase of claim 3, which comprises a substitution of histidine 204.

52. (Previously Presented) The kit of claim 47, wherein the mutant retroviral reverse transcriptase comprises a substitution of histidine 204.